

5. [12 points] For each of the following series, carefully prove its convergence or divergence. You must clearly indicate what test(s) you use in your proof, and must carefully show all work that demonstrates their appropriateness and the calculations associated with the tests.

a. [6 points] 
$$\sum_{n=1}^{\infty} \frac{2^n - 1}{e^n - n}$$

b. [6 points] 
$$\sum_{n=2}^{\infty} \frac{n}{n^3 + \cos(n)}$$